

AD-A125 243

PARTIAL BIBLIOGRAPHY OF WORK ON EXPERT SYSTEMS(U)
STANFORD UNIV CA DEPT OF COMPUTER SCIENCE B G BUCHANAN
DEC 82 STAN-CS-82-953 MDA903-80-C-0107

1/1

UNCLASSIFIED

F/G 9/2

. NL

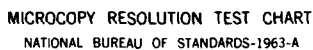
END

DATE

FILMED

83

DTIC



MICROCOPY RESOLUTION TEST CHART
NATIONAL BUREAU OF STANDARDS-1963-A

December 1982
Also numbered HPP-82-30

Report No. STAN-CS-82-953

12

Partial Bibliography of Work on Expert Systems

by

Bruce G. Buchanan

AD A125243

Department of Computer Science

Stanford University
Stanford, CA 94305

DTIC
SELECTED
MAR 4 1983
A

DTIC FILE COPY



This document has been approved
for public release and sale; its
distribution is unlimited.

00 00 010 067

November 1982

BRUCE G. BUCHANAN
HEURISTIC PROGRAMMING PROJECT
DEPARTMENT OF COMPUTER SCIENCE
STANFORD UNIVERSITY

Accession For
NEWS BRANCH
1942
Letter on file



The Stanford University component of this research is funded in part by ARPA contract #MDA903-80-C-0107, NIH contract #NIH RR 00785-10, ONR contract #N00014-79-C-0302, and NLM contract #NLM 1 PO1 LM03395.

PARTIAL BIBLIOGRAPHY OF WORK ON EXPERT SYSTEMS

Compiled by Bruce G. Buchanan
November 1982

Abbreviations Used in This Bibliography:

AAAI	American Association for Artificial Intelligence
ACM	Association for Computing Machinery
AFIPS	American Federation of Information Processing Societies
ECAI	European Conference on Artificial Intelligence
IEEE	Institute for Electrical and Electronic Engineers
IFIPS	International Federation of Information Processing Societies
IJCAI	International Joint Conferences on Artificial Intelligence
SIGPLAN	ACM Special Interest Group on Programming Languages

- Abe, N., Itoh, F., and Tsuji, S. Toward a learning of object models using analogical objects and verbal instruction. *Proc. AAAI-82*, 1982, pp. 362-366.
- Addis, T. R. Towards an 'expert' diagnostic system. *ICL Technical J.* 2:79-105, 1980.
- Addis, T. R., and Hartley, R. T. *A faultfinding aid using a content addressable file store*. ICL Technical Note TN 79, ICL Ltd., London, 1979.
- Aikins, J. S. *Prototypes and production rules: A knowledge representation for computer consultation*. Rep. STAN-CS-80-814, doctoral dissertation, Computer Science Dept., Stanford University, 1980.
- Aikins, J. S. Representation of control knowledge in expert systems. *Proc. AAAI-80*, 1980, pp. 121-123.
- Amarel, S. *Problems of representation in heuristic problem solving: Related issues in the development of expert systems*. Rep. CBM-TR-118, Laboratory for Computer Science Research, Rutgers University, 1981.
- Anderson, R. H., and Gillogly, J. J. The RAND intelligent terminal (RITA) as a network access aid. *Proc. AFIPS 45*, 1976, pp. 501-509.
- Balzer, R., Erman, L. D., London, P., and Williams, C. Hearsay-III: A domain independent framework for expert systems. *Proc. AAAI-80*, 1980, pp. 108-110.
- Barnett, J. A. Computational methods for a mathematical theory of evidence. *Proc. IJCAI-81*, 1981, pp. 868-875.
- Barnett, J. A., and Bernstein, M. I. *Knowledge-based systems: A tutorial*. Rep. SDC-TM-(L)-5903/000/00, System Development Corp., Santa Monica, CA, 1977.
- Barnett, J. A., and Erman, L. *Making control decisions in an expert system is a problem-solving task*. USC/ISI Tech. Rep., Information Sciences Institute, University of Southern California, 1982.
- Barr, A., and Feigenbaum, E. A. (Eds.). *The handbook of artificial intelligence* (Vols. I and II). Los Altos, CA: Kaufmann, 1981-1982.

- Barstow, D. An experiment in knowledge-based automatic programming. *Artificial Intelligence* 12:73-119, 1979.
- Barstow, D. Knowledge engineering in nuclear physics. *Proc. IJCAI-79*, 1979, pp. 34-36.
- Barstow, D., Duffey, R., Smoliar, S., and Vestal, S. An overview of Φ_{NIX} . *Proc. AAAI-82*, 1982, pp. 367-369.
- Basden, A., and Kelly, B. A. An application of expert systems techniques in materials engineering. *Proc. Colloquium on Application of Knowledge Based (or Expert) Systems, London*, 1982.
- Bennett, J. S. On the structure of the acquisition process for rule based systems. In *Machine intelligence* (Infotech State of the Art Report Series 9, No. 3). Maidenhead, Eng.: Pergamon Infotech Ltd., 1981.
- Bennett, J., Buchanan, B., Cohen, P., and Fisher, F. *Applications oriented AI research: Science and mathematics*. Rep. STAN-CS-79-756, Computer Science Dept., Stanford University, 1979. (Also in A. Barr and E. A. Feigenbaum (Eds.), *Handbook of Artificial Intelligence*, Vol. II.)
- Bennett, J., and Engelmores, R. SACON: A knowledge-based consultant for structural analysis. *Proc. IJCAI-79*, 1979, pp. 47-49.
- Bennett, J. S., and Hollander, C. R. DART: An expert system for computer fault diagnosis. *Proc. IJCAI-81*, 1981, pp. 843-845.
- Bennett, S. W., and Scott, A. C. Computer-assisted customized antimicrobial dosages. *Am. J. Hospital Pharmacy* 37:523-530, 1980.
- Blum, R. L. Induction of causal relationships from a time-oriented clinical database: An overview of the RX project. *Proc. AAAI-82*, 1982, pp. 355-357.
- Bonnet, A. Applications de l'intelligence artificielle: Les systemes experts. *RAIRO Informatique/Computer Science* 15(4):325-341, 1981.
- Brooks, R. A comparison among four packages for knowledge-based systems. *Proc. Int. Conf. on Cybernetics and Society*, 1981, pp. 279-283.
- Brown, J. S., and Burton, R. Diagnostic models of procedural bugs in basic mathematical skills. *Cognitive Science* 2:155-192, 1978.
- Brown, J. S., Burton, R. R., and de Kleer, J. Knowledge engineering and pedagogical techniques in SOPHIE I, II, and III. In D. Sleeman and J. S. Brown (Eds.), *Intelligent tutoring systems*. London: Academic Press, 1982.
- Buchanan, B. G. Research on expert systems. In J. E. Hayes, D. Michie, and Y.-H. Pao (Eds.), *Machine intelligence 10*. Chichester, Eng.: Horwood, 1982. (Also Rep. HPP-81-1, Computer Science Dept., Stanford University, 1981.)
- Buchanan, B. G., and Barstow, D. R. *Maxims for knowledge engineering*. Rep. HPP-81-4, Computer Science Dept., Stanford University, 1981.
- Buchanan, B. G., and Duda, R. O. Principles of rule-based expert systems. In M. Yovits (Ed.), *Advances in Computers* (Vol. 22). New York: Academic Press, forthcoming.

- Buchanan, B. G., and Feigenbaum, E. A. DENDRAL and Meta-DENDRAL: Their applications dimension. *Artificial Intelligence* 11:5-24, 1978.
- Bundy, A., Byrd, L., Luger, G., Mellish, C., and Palmer, M. Solving mechanics problems using meta-level inference. In D. Michie (Ed.), *Expert systems in the micro-electronic age*. Edinburgh: Edinburgh University Press, 1979.
- Burton, R. R. Diagnosing bugs in a simple procedural skill. In D. Sleeman and J. S. Brown (Eds.), *Intelligent tutoring systems*. London: Academic Press, 1982.
- Campbell, A. N., Hollister, V. F., Duda, R. O., and Hart, P. E. Recognition of a hidden mineral deposit by an artificial intelligence program. *Science* 217(3):927-929, 1982.
- Carhart, R. E. CONGEN: An expert system aiding the structural chemist. In D. Michie (Ed.), *Expert systems in the micro-electronic age*. Edinburgh: Edinburgh University Press, 1979.
- Chandrasekaran, B., and Mittal, S. Deep versus compiled knowledge approaches to diagnostic problem-solving. *Proc. AAAI-82*, 1982, pp. 349-354.
- Chandrasekaran, B., Mittal, S., and Smith, J. W. RADEX—Towards a computer-based radiology consultant. In E. S. Gelsema and L. N. Kanal (Eds.), *Pattern recognition in practice*. New York: North-Holland, 1980.
- Clancey, W. J. *Transfer of rule-based expertise through a tutorial dialogue*. Doctoral dissertation, Stanford University, 1979.
- Clancey, W. J. Tutoring rules for guiding a case method dialogue. In D. Sleeman and J. S. Brown (Eds.), *Intelligent tutoring systems*. London: Academic Press, 1982.
- Clancey, W. J., and Letsinger, R. NEOMYCIN: Reconfiguring a rule-based expert system for application to teaching. *Proc. IJCAI-81*, 1981, pp. 829-836.
- Clark, K. L., and McCabe, F. G. PROLOG: A language for implementing expert systems. In J. E. Hayes, D. Michie, and Y.-H. Pao (Eds.), *Machine intelligence 10*. Chichester, Eng.: Horwood, 1982.
- Cohen, P., and Feigenbaum, E. A. (Eds.). *The handbook of artificial intelligence* (Vol. III). Los Altos, CA: Kaufmann, 1982.
- Cullingford, R. E., Krueger, M. W., Selfridge, M., and Bienkowski, M. A. Automated explanations as a component of a computer-aided design system. *IEEE Transactions on Systems, Man, and Cybernetics* SMC-12(2):168-181, 1982.
- Davis, R. Interactive transfer of expertise: Acquisition of new inference rules. *Artificial Intelligence* 12:121-157, 1979.
- Davis, R. Expert systems: Where are we? and Where do we go from here? *AI Magazine* 3(2):3-22, 1982.
- Davis, R., Austin, H., Carlbom, I., Frawley, B., Pruchnik, P., Sneiderman, R., and Gilbreth, J. A. The DIPMETER ADVISOR: Interpretation of geologic signals. *Proc. IJCAI-81*, 1981, pp. 846-849.
- Davis, R., Buchanan, B. G., and Shortliffe, E. H. Production rules as a representation of a knowledge-based consultation program. *Artificial Intelligence* 8:15-45, 1977.

- Davis, R., Wieckert, K., and Shirley, M. Diagnosis based on description of structure and function. *Proc. AAAI-82*, 1982, pp. 137-142.
- de Kleer, J. *Causal and teleological reasoning in circuit recognition*. AI Lab. Rep. TR-529, doctoral dissertation, Dept. of Electrical Engineering and Computer Science, Massachusetts Institute of Technology, 1979.
- de Kleer, J., and Sussman, G. J. Propagation of constraints applied to circuit synthesis. *Int. J. Circuit Theory and Applications* 8:127-144, 1980.
- de Mori, R., Giordana, A., Laface, P., and Saitta, L. An expert system for speech decoding. *Proc. ECAI-82*, 1982, pp. 127-132.
- Dincbas, M. A knowledge-based expert system for automatic analysis and synthesis in CAD. *Proc. IFIPS*, 1980, pp. 705-710.
- Duda, R. O., and Garvey, T. D. *A study of knowledge-based systems for photo interpretation* (Final Report). Artificial Intelligence Center, SRI International, Menlo Park, CA, 1980.
- Duda, R. O., and Gaschnig, J. G. Knowledge-based expert systems come of age. *Byte* 6(9):238-281, 1981.
- Duda, R., Gaschnig, J., and Hart, P. Model design in the Prospector consultant system for mineral exploration. In D. Michie (Ed.), *Expert systems in the micro-electronic age*. Edinburgh: Edinburgh University Press, 1979.
- Duda, R. O., Hart, P. E., and Nilsson, N. J. Subjective Bayesian methods for rule-based inference systems. *Proc. 1976 Natl. Computer Conf.*, 1976, pp. 1075-1082.
- Duda, R. O., Hart, P. E., Nilsson, N. J., and Sutherland, G. L. Semantic network representations in rule-based inference systems. In D. A. Waterman and F. Hayes-Roth (Eds.), *Pattern-directed inference systems*. New York: Academic Press, 1978.
- Duda, R. O., and Shortliffe, E. H. Expert systems. *Science*, forthcoming.
- Eastman, C. M. The representation of design problems and maintenance of their structure. In J. C. Latombe (Ed.), *Artificial intelligence and pattern recognition in computer aided design*. New York: North-Holland, 1978, pp. 335-373.
- Engelman, C., Berg, C. H., and Bischoff, M. KNOBS: An experimental knowledge based tactical air mission planning system. *Proc. IJCAI-79*, 1979, pp. 247-249.
- Engelmore, R. S., and Terry, A. Structure and function of the CRYSLIS system. *Proc. IJCAI-79*, 1979, pp. 250-256.
- Ennis, S. P. Expert systems: A user's perspective of some current tools. *Proc. AAAI-82*, 1982, pp. 319-321.
- Erman, L. D., Hayes-Roth, F., Lesser, V. R. and, Reddy, D. R. The Hearsay-II speech understanding system: Integrating knowledge to resolve uncertainty. *Computing Surveys* 12:213-253, 1980.
- Erman, L. D., London, P. E., and Fickas, S. F. The design and an example use of HEARSAY-III. *Proc. IJCAI-81*, 1981, pp. 409-415.

- Fagan, L. VM: *Representing time-dependent relations in a clinical setting*. Doctoral dissertation, Computer Science Dept., Stanford University, 1980.
- Fahlman, S. E. *NETL: A system for representing and using real-world knowledge*. Cambridge, MA: MIT Press, 1979.
- Fain, J., Hayes-Roth, F., Sowizral, H., and Waterman, D. *Programming examples in ROSIE*. Rep. N-1646-ARPA, Rand Corporation, Santa Monica, CA, 1981.
- Fallon, R. *Rule-based modeling as an analysis tool: Implications for resource allocation within the Strategic Air Command*. Rep. N-1489-AF, Rand Corporation, Santa Monica, CA, 1980.
- Feigenbaum, E. A. The art of artificial intelligence: Themes and case studies in knowledge engineering. *Proc. IJCAI-5*, 1977, pp. 1014-1029.
- Feigenbaum, E. A. Themes and case studies of knowledge engineering. In D. Michie (Ed.), *Expert systems in the micro-electronic age*. Edinburgh: Edinburgh University Press, 1979.
- Feigenbaum, E. A., Buchanan, B. G., and Lederberg, J. On generality and problem solving: A case study using the DENDRAL program. In B. Meltzer and D. Michie (Eds.), *Machine intelligence 6*. New York: American Elsevier, 1971.
- Forgy, C., and McDermott, J. OPS, a domain-independent production system language. *Proc. IJCAI-5*, 1977, pp. 933-939.
- Fox, J., and Rector, A. Expert systems for primary medical care? *Automedica* 4(2/3):123-130, 1982.
- Fox, M. S., Allen, B., and Strohm, G. Job-shop scheduling: An investigation in constraint-directed reasoning. *Proc. AAAI-82*, 1982, pp. 155-158.
- Friedland, P. *Knowledge-based experiment design in molecular genetics*. Rep. STAN-CS-79-771, doctoral dissertation, Computer Science Dept., Stanford University, 1979.
- Friedland, P. Acquisition of procedural knowledge from domain experts. *Proc. IJCAI-81*, 1981, pp. 856-861.
- Gallaire, H. Artificial intelligence and industry. *Proc. ECAI-82*, 1982, pp. 37-42.
- Gaschnig, J. Application of the Prospector system to geological exploration problems. In J. E. Hayes, D. Michie, and Y.-H. Pao (Eds.), *Machine intelligence 10*. Chichester, Eng.: Horwood, 1982.
- Gaschnig, J., Reboh, R., and Reiter, J. *Development of a knowledge-based system for water resources problems*. Rep. 1619, SRI International, Menlo Park, CA, 1981.
- Gelernter, H. L., Sanders, A. F., Larsen, D. L., Agarwal, K. K., Boivie, R. H., Spritzer, G. A., and Searleman, J. E. Empirical explorations of SYNCHEM. *Science* 197:1041-1049, 1977.
- Genesereth, M. R. *Automated consultation for complex computer systems*. Doctoral dissertation, Harvard University, 1978.
- Genesereth, M. Diagnosis using hierarchical design models. *Proc. AAAI-82*, 1982, pp. 278-283.

- Gerring, P., Shortliffe, E. H., and van Melle, W. The interviewer/reasoner model: An approach to improving system responsiveness in interactive AI systems. *AAAI Magazine* 3(4):24-27, 1982.
- Gershman, A. Building a geological expert system for dipmeter interpretation. *Proc. ECAI-82*, 1982, pp. 139-140.
- Gevarter, W. B. *An overview of expert systems*. Rep. NBSIR 82-2505, Natl. Bureau of Standards, U.S. Dept. of Commerce, 1982.
- Goldstein, I. P., and Roberts, B. Using frames in scheduling. In P. Winston and D. Brown (Eds.), *Artificial intelligence: An MIT perspective* (Vol. 1). Cambridge, MA: MIT Press, 1979.
- Gomez, F. J. *On general and expert knowledge-based methods in problem-solving*. Doctoral dissertation, Ohio State University, 1981.
- Gorry, G. A., Silverman, H., and Pauker, S. G. Capturing clinical expertise: A computer program that considers clinical responses to digitalis. *Am. J. Medicine* 64:452-460, 1978.
- Green, C. *Research on knowledge based programming and algorithm design*. Rep. SCI-ICS-L-81-5, Systems Control, Inc., Palo Alto, CA, 1981.
- Green, C., Gabriel, R. P., Kant, E., Kedzierski, B. I., McCune, B. P., Phillips, J. V., Tappel, S. T., and Westfold, S. J. Results in knowledge based program synthesis. *Proc. IJCAI-79*, 1979, pp. 342-344.
- Grinberg, M. R. *A knowledge-based design environment for digital electronics*. Doctoral dissertation, University of Maryland, 1980.
- Hart, P. E. Progress on a computer-based consultant. *Proc. IJCAI-4*, 1975, pp. 831-841.
- Hartley, R. T. How expert should an expert system be? *Proc. IJCAI-81*, 1981, pp. 862-867.
- Hayes-Roth, F., Waterman, D. A., and Lenat, D. B. Principles of pattern-directed inference systems. In D. A. Waterman and F. Hayes-Roth (Eds.), *Pattern-directed inference systems*. New York: Academic Press, 1978.
- Hayes-Roth, F., Waterman, D. A., and Lenat, D. B. *Building expert systems*. Reading, MA: Addison-Wesley, forthcoming.
- Heiser, J. F., Brooks, R. E., and Ballard, J. P. Progress report: A computerized psychopharmacology advisor. *Proc. 11th Collegium Internationale Neuro-Psychopharmacologicum*, Vienna, 1978.
- Hollander, C. R., and Reinstein, H. C. A knowledge-based application definition system. *Proc. IJCAI-79*, 1979, pp. 397-399.
- Holtz, N. M. *Symbolic manipulation of design constraints*. Doctoral dissertation, Dept. of Civil Engineering, Carnegie-Mellon University, 1982.
- Horn, W., Buchstaller, W., and Trapp, R. Knowledge structure definition for an expert system in primary medical care. *Proc. IJCAI-81*, 1981, pp. 850-852.
- Hudson, D. L. *Rule-based computerizations of emergency room procedures derived*

- from criteria mapping. Doctoral dissertation, University of California at Los Angeles, 1981.
- Infotech Ltd. *Machine intelligence* (Infotech State of the Art Report Series 9, No. 3). Maidenhead, Eng.: Pergamon Infotech Ltd., 1981.
- Ishizuka, M., Fu, K. S., and Yao, J. T. P. Inexact inference for rule-based damage assessment of existing structures. *Proc. IJCAI-81*, 1981, pp. 837-842.
- Ishizuka, M., Fu, K. S., and Yao, J. T. P. *SPERIL I: Computer based structural damage assessment system*. Rep. CE-STR-81-36, Purdue University, 1981.
- Iwasaki, Y., and Friedland, P. SPEX: A second-generation experiment design system. *Proc. AAAI-82*, 1982, pp. 341-344.
- Kaihara, S., Koyama, T., Minamikawa, T., and Yasaka, T. A rule-based physicians' consultation system for cardiovascular diseases. *Proc. Int. Conf. on Cybernetics and Society*, 1978, pp. 85-88.
- Kelly, V. E., and Steinberg, L. The Critter System: Analyzing digital circuits by propagating behaviors and specifications. *Proc. AAAI-82*, 1982, pp. 284-289.
- Klahr, P., McArthur, D., and Narain, S. SWIRL: An object-oriented air battle simulator. *Proc. AAAI-82*, 1982, pp. 331-334.
- Krueger, M. W., Cullingford, R. E., and Bellavance, D. A. Control issues in a multiprocess computer-aided design system containing expert knowledge. *Proc. Int. Conf. on Cybernetics and Society*, 1981, pp. 139-143.
- Kulikowski, C. A. Artificial intelligence methods and systems for medical consultation. *IEEE Transactions on Pattern Analysis and Machine Intelligence PAMI-2*(5):464-476.
- Kulikowski, C., and Weiss, S. The evaluation of performance in empirical and theoretical models of medical decision-making. *Proc. IEEE Computer Society Workshop on Pattern Recognition and AI, Princeton*, 1978.
- Kunz, J. C., Fallat, R. J., McClung, D. H., Osborn, J. J., Votteri, B. A., Nii, H. P., Aikins, J. S., Fagan, L. M., and Feigenbaum, E. A. *A physiological rule-based system for interpreting pulmonary function test results*. Rep. HPP-78-19, Computer Science Dept., Stanford University, 1978.
- Lafue, G. M. E., and Mitchell, T. M. *Data base management systems and expert systems for CAD*. Rep. LCSR-TR-28, Laboratory for Computer Science Research, Rutgers University, 1982.
- Larkin, J., McDermott, J., Simon, D. P., and Simon, H. A. Expert and novice performance in solving physics problems. *Science* 208:20, 1980.
- Latombe, J. C. (Ed). *Artificial intelligence and pattern recognition in computer aided design*. New York: North-Holland, 1978.
- Lauriere, J. L. A language and a program for stating and solving combinatorial problems. *Artificial Intelligence* 10:29-127, 1978.
- Lauriere, J. L. Representation et utilisation des connaissances. Publications du Gr. 22, Programmes d'Intelligence Artificielle Utilisant une Grande Quantite de Connaissances, Rouen, 1979, pp. 3-112.

- Lenat, D. *An artificial intelligence approach to discovery in mathematics as heuristic search*. Rep. STAN-CS-76-570, doctoral dissertation, Computer Science Dept., Stanford University, 1976.
- Lesser, V. R., and Corgill, D. *Cooperative distributed problem solving: A new approach for structuring distributed systems*. Rep. 78-07, Computer and Information Science Dept., University of Massachusetts, 1978.
- Lindberg, D. A. B., Gaston, L. W., Kingsland, L. C., and Vanker, A. D. *AI/COAG, a knowledge-based system for consultation about human hemostasis disorders: Progress report*. *Proc. 5th Annual Symposium on Computer Applications in Medical Care*, 1981, pp. 253-257.
- Lindberg, D., Sharp, G., Kingsland, L., Weiss, S., Hayes, S., Ueno, H., and Hazelwood, S. *Computer based rheumatology consultant*. *Proc. 3rd World Conference on Medical Informatics*, 1980, pp. 1311-1315.
- Lindsay, R., Buchanan, B. G., Feigenbaum, E. A., and Lederberg, J. *Applications of artificial intelligence for organic chemistry: The DENDRAL Project*. New York: McGraw-Hill, 1980.
- Mamdani, E. H. *Rule-based methods for designing industrial process controllers*. *Proc. Colloquium on Application of Knowledge Based (or Expert) Systems*, London, 1982.
- McColl, D. C., Morris, P. H., Kibler, D. F., and Bechtel, R. J. *STAMMER2 production system for tactical situation assessment*. Rep. TD 298, Naval Ocean Systems Center, San Diego, CA, 1979.
- McCune, B. P. *The PSI program model builder synthesis of very high-level programs*. *SIGPLAN Notices* 12(8):130-139, 1977.
- McDermott, D., and Brooks, R. *ARBY: Diagnosis with shallow causal methods*. *Proc. AAAI-82*, 1982, pp. 370-372.
- McDermott, J. *R1: An expert in the computer systems domain*. *Proc. AAAI-80*, 1980, pp. 269-271.
- McDermott, J. *R1: The formative years*. *AI Magazine* 2:21-29, 1981.
- McDermott, J. *XSEL: A computer salesperson's assistant*. In J. E. Hayes, D. Michie, and Y.-H. Pao (Eds.), *Machine intelligence 10*. Chichester, Eng.: Horwood, 1982.
- McDermott, J., and Steele, B. *Extending a knowledge-based system to deal with ad hoc constraints*. *Proc. IJCAI-81*, 1981, pp. 824-828.
- Michalski, R. S., Davis, J. H., Bisht, V. S., and Sinclair, J. B. *Plant/ds: An expert consulting system for the diagnosis of soybean disease*. *Proc. ECAI-82*, 1982, pp. 133-138.
- Michie, D. (Ed.). *Expert systems in the micro-electronic age*. Edinburgh: Edinburgh University Press, 1979.
- Michie, D. *Expert systems*. *Computer Journal* 23(4):369-376, 1980.
- Miller, R. A., Pople, H. E., and Meyers, J. D. *Internist-I: An experimental computer-based diagnostic consultant for general internal medicine*. *New England J. Medicine* 307(8):468-476, 1982.

- Mitchell, T. M., Steinberg, L., Smith, R. G., Schooley, P., Jacobs, H., and Kelly, V. Representations for reasoning about digital circuits. *Proc. IJCAI-81*, 1981, pp. 343-344. Also Rutgers Computer Science Dept. Tech. Rep. LCSR-TR-11.
- Moses, J. Symbolic integration: The stormy decade. *Communications ACM* 14:548-560, 1971.
- Neiman, D. Graphical animation from knowledge. *Proc. AAAI-82*, 1982, pp. 373-376.
- Nelson, W. R. Reactor: An expert system for diagnosis and treatment of nuclear reactor accidents. *Proc. AAAI-82*, 1982, pp. 296-301.
- Newell, A. *HARPY, production systems and human cognition*. Rep. CMU-CS-78-140, Computer Science Dept., Carnegie-Mellon University, 1978.
- Newell, A., Barnett, J., Forgie, J. W., Green, C., Klatt, D., Licklider, J. C. R., Munson, J., Reddy, D. R., and Woods, W. A. *Speech understanding systems: Final report of a study group*. New York: American Elsevier, 1973.
- Nii, H. P., and Aiello, N. AGE (Attempt to GEneralize): A knowledge-based program for building knowledge-based programs. *Proc. IJCAI-79*, 1979, pp. 645-655.
- Nii, H. P., and Feigenbaum, E. A. Rule-based understanding of signals. In D. Waterman and F. Hayes-Roth (Eds.), *Pattern-directed inference systems*. New York: Academic Press, 1978.
- Nii, H. P., Feigenbaum, E. A., Anton, J. J., and Rockmore, A. J. Signal-to-symbol transformation: HASP/SIAP case study. *AI Magazine* 3(2):23-35, 1982.
- Nilsson, N. J. Knowledge-based techniques in artificial intelligence. Artificial Intelligence Center, SRI International, Menlo Park, CA, 1978.
- Novak, G., Jr., and Araya, A. A. Research on expert problem solving in physics. *Proc. AAAI-80*, 1980, pp. 178-180.
- Oh, S. Y. *A pattern recognition and rule-based approach to power system security assessment*. Doctoral dissertation, Case Western Reserve University, 1981.
- O'Shea, T. Rule-based computer tutors. *Proc. 1979 AISB Summer School*, 1979, pp. 226-232.
- Patil, R. S. *Causal representation of patient illness for electrolyte and acid-base diagnosis*. Doctoral dissertation, Massachusetts Institute of Technology, 1981.
- Patil, R. S., Szolovits, P., and Schwartz, W. B. Causal understanding of patient illness in medical diagnosis. *Proc. IJCAI-81*, 1981, pp. 893-899.
- Patil, R. S., Szolovits, P., and Schwartz, W. B. Information acquisition in diagnosis. *Proc. AAAI-82*, 1982, pp. 345-348.
- Pauker, S., Gorry, A., Kassirer, J., and Schwartz, W. Towards the simulation of clinical cognition—Taking a present illness by computer. *Am. J. of Medicine* 60:981-996, 1976.
- Pinson, S. Representation des connaissances dans les systemes experts. *RAIRA Informatique/Computer Science* 15(4):343-367, 1981.
- Pollack, M. E., Hirschberg, J., and Weber, B. User participation in the reasoning processes of expert systems. *Proc. AAAI-82*, 1982, pp. 358-361.

- Pople, H. E. The formation of composite hypotheses in diagnostic problem solving—An exercise in synthetic reasoning. *Proc. IJCAI-5*, 1977, pp. 1030-1037.
- Pople, H. E., Meyers, J. D., and Miller, R. A. DIALOG: A model of diagnostic logic for internal medicine. *Proc. IJCAI-4*, 1975, pp. 848-855.
- Reboh, R. Using a matcher to make an expert consultation system behave intelligently. *Proc. AAAI-80*, 1980, pp. 231-234.
- Reboh, R. *Knowledge engineering techniques and tools for expert systems*. Doctoral dissertation, Linkoping University, 1981.
- Reboh, R. *Knowledge engineering techniques and tools in the Prospector environment*. Tech. Note 243, Artificial Intelligence Center, SRI International, Menlo Park, CA, 1981.
- Reggia, J. A. A production rule system for neurological localization. *Proc. 2nd Annual Symposium on Computers Applied to Medical Care*, 1978, pp. 254-260.
- Reggia, J. A. *Knowledge-based decision support systems: Development through KMS*. Doctoral dissertation, University of Maryland, 1981.
- Reinstein, H. C., and Aikins, J. S. Application design: Issues in expert system architecture. *Proc. IJCAI-81*, 1981, pp. 888-892.
- Rieger, C., and Grinberg, M. A system of cause-effect representation and simulation for computer-aided design. In J. C. Latombe (Ed.), *Artificial intelligence and pattern recognition in computer-aided design*. New York: North-Holland, 1978.
- Rivlin, J. M., Hsu, M. B., and Marcal, P. V. *Knowledge based consultation for finite element structural analysis*. Tech. Rep. AFWAL-TR-80-3069, Flight Dynamics Laboratory, Wright-Patterson Air Force Base, 1980.
- Rosenberg, S. *Knowledge based system for providing intelligent access to a petroleum user database*. Dept. of Energy, Lawrence Berkeley Laboratory, University of California at Berkeley, 1979.
- Scott, A. C., Clancey, W., Davis, R., and Shortliffe, E. H. Explanation capabilities of knowledge-based production systems. *Am. J. of Computational Linguistics*, Microfiche 62, 1977.
- Shortliffe, E. H. *Computer based medical consultations: MYCIN*. New York: American Elsevier, 1976.
- Shortliffe, E. H., Buchanan, B. G., and Feigenbaum, E. A. Knowledge engineering for medical decision making: A review of computer-based clinical decision aids. *Proc. IEEE* 67(9):1207-1224, 1979.
- Shortliffe, E. H., Scott, A. C., Bischoff, M. B., Campbell, A. B., van Melle, W., and Jacobs, C. D. ONCOCIN: An expert system for oncology protocol management. *Proc. IJCAI-81*, 1981, pp. 876-881.
- Shrager, J., and Finin, T. An expert system that volunteers advice. *Proc. AAAI-82*, 1982, pp. 339-340.

- Shubin, H., and Ulrich, J. W. IDT: An intelligent diagnostic tool. *Proc. AAAI-82*, 1982, pp. 290-295.
- Sleeman, D. Assessing aspects of competence in basic algebra. In D. Sleeman and J. S. Brown (Eds.), *Intelligent tutoring systems*. London: Academic Press, 1982.
- Sriram, D., Maher, M. L., Bielak, J., and Fenves, S. J. *Expert systems for civil engineering—A survey*. Memo R-82-137, Dept. of Civil Engineering, Carnegie-Mellon University, 1982.
- Stabile, L. A. Frame-based computer network monitoring. *Proc. AAAI-82*, 1982, pp. 327-330.
- Stallman, R. M., and Sussman, G. J. Forward reasoning and dependency-directed backtracking in a system for computer-aided circuit analysis. *Artificial Intelligence* 9:135-196, 1977.
- Steels, L. *Reasoning modeled as a society of communicating experts*. Memo TR 542, Artificial Intelligence Laboratory, Massachusetts Institute of Technology, 1979.
- Stefik, M. Inferring DNA structures from segmentation data. *Artificial Intelligence* 11:114, 1978.
- Stefik, M. An examination of a frame-structured representation system. *Proc. IJCAI-79*, 1979, pp. 845-852.
- Stefik, M. *Planning with constraints*. Rep. STAN-CS-80-784, doctoral dissertation, Computer Science Dept., Stanford University, 1980.
- Stefik, M., Aikins, J., Balzer, R., Benoit, J., Birnbaum, L., Hayes-Roth, F., and Sacerdoti, E. The organization of expert systems: A tutorial. *Artificial Intelligence* 18:135-173, 1982.
- Stefik, M., and Conway, L. *Toward the principled engineering of knowledge*. Memo KB-VLSI-82-18, XEROX PARC, Palo Alto, CA, 1982.
- Stefik, M., and Martin, N. *A review of knowledge-based problem solving as a basis for a genetics experiment designing system*. Rep. HPP-77-5, Computer Science Dept., Stanford University, 1977.
- Sussman, G. J. Electrical design: A problem for artificial intelligence research. *Proc. IJCAI-5*, 1977, pp. 894-900.
- Sussman, G. J. SLICES: At the boundary between analysis and synthesis. In J. C. Latombe (Ed.), *Artificial intelligence and pattern recognition in computer-aided design*. New York: North-Holland, 1978.
- Suwa, M., Scott, A. C., and Shortliffe, E. H. An approach to verifying completeness and consistency in a rule-based expert system. *AAAI Magazine* 3(4):16-20, 1982.
- Swartout, W. A digitalis therapy advisor with explanations. *Proc. IJCAI-5*, 1977, pp. 819-823.
- Swartout, W. Explaining and justifying expert consulting programs. *Proc. IJCAI-81*, 1981, pp. 815-822.

- Swartout, W. *Producing explanations and justifications of expert consulting programs*. Rep. TR-251, doctoral dissertation, Laboratory for Computer Science, Massachusetts Institute of Technology, 1981.
- Szolovits, P. (Ed.). *Artificial intelligence in medicine* (AAAS Selected Symposium 52). Boulder, CO: Westview Press, 1982.
- Szolovits, P., and Pauker, S. G. Categorical and probabilistic reasoning in medical diagnosis. *Artificial Intelligence* 11:115-144, 1978.
- Trigoboff, M. L. *IRIS: A framework for the construction of clinical consultation systems*. Doctoral dissertation, Rutgers University, 1978.
- Tsotsos, J. K. On classifying time-varying events. *IEEE Computer Society Conf. on Pattern Recognition and Image Processing*, 1981, pp. 193-199.
- Underwood, W. E. A CSA model-based nuclear power plant consultant. *Proc. AAAI-82*, 1982, pp. 302-305.
- van Melle, W. *A domain independent system that aids in constructing knowledge based consultation programs*. Rep. STAN-CS-80-820, doctoral dissertation, Computer Science Dept., Stanford University, 1980.
- Walker, A. *Automatic generation of explanations of results from knowledge bases*. Rep. RJ 3481, Computer Science Dept., IBM Research Laboratory, San Jose, CA, 1982.
- Waterman, D. A. Exemplary programming in RITA. In D. Waterman and F. Hayes-Roth (Eds.), *Pattern-directed inference systems*. New York: Academic Press, 1978.
- Waterman, D. A. User-oriented systems for capturing expertise: A rule-based approach. In D. Michie (Ed.), *Expert systems in the micro-electronic age*. Edinburgh: Edinburgh University Press, 1979.
- Waterman, D. A., Anderson, R. H., Hayes-Roth, F., Klahr, P., Martins, G., and Rosenschein, S. J. *Design of a rule-oriented system for implementing expertise*. Note N-1158-1-ARPA, Rand Corporation, Santa Monica, CA, 1979.
- Waterman, D. A., and Hayes-Roth, F. (Eds.). *Pattern-directed inference systems*. New York: Academic Press, 1978.
- Weiss, S., and Kulikowski, C. EXPERT: A system for developing consultation models. *Proc. IJCAI-79*, 1979, pp. 942-947.
- Weiss, S., Kulikowski, C., Amarel, S., and Safir, A. A model-based method for computer-aided medical decision making. *Artificial Intelligence* 11:145-172, 1978.
- Weiss, S., Kulikowski, C., Apte, C., and Uschold, M. Building expert systems for controlling complex programs. *Proc. AAAI-82*, 1982, pp. 322-326.
- Weiss, S., Kulikowski, C. A., and Galen, R. S. Developing microprocessor based expert models for instrument interpretation. *Proc. IJCAI-81*, 1981, pp. 853-855.
- Wesson, R. B. Planning in the world of the air traffic controller. *Proc. IJCAI-5*, 1977, pp. 473-479.

- Wilkins, D. Using patterns and plans in chess. *Artificial Intelligence* 14:165-203, 1980.
- Winston, P. H. *Learning and reasoning by analogy: The details*. Memo 520, Artificial Intelligence Laboratory, Massachusetts Institute of Technology, 1979.
- Wipke, W. T., Braun, H., Smith, G., Choplin, F., and Sieber, W. SECS—Simulation and evaluation of chemical synthesis: Strategy and planning. In W. T. Wipke and W. J. House (Eds.), *Computer assisted organic synthesis*. Washington, D.C.: Am. Chem. Soc., 1977, pp. 97-127.
- Yu, V. L., Fagan, L., Wraith, S. M., Clancey, W. J., Scott, A. C., Hannigan, J., Blum, R., Buchanan, B. G., Cohen, S. N., Davis, R., Aikins, J. S., van Melle, W., Shortliffe, E. H., and Axline, S. Antimicrobial selection for meningitis by a computerized consultant: A blinded evaluation by infectious disease experts. *J. Am. Medical Association* 241(12):1279-1282, 1979.
- Zarri, G. P. Building the inference component of an historical information retrieval system. *Proc. IJCAI-81*, 1981, pp. 401-408.

DATE
FILMED
— 8